
ISOPOGONS & PETROPHILES

The Association of Societies for Growing Australian Plants Isopogon & Petrophile Study Group Newsletter

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Isopogon latifolius. Stirling Ranges WA. (Photo by M. Pieroni)
(See page 5 for more details about this species)

CONTENTS

- 2 EDITORIAL
- 3 STUDY GROUP QUESTIONNAIRE , CONSERVATION
- 4 *ISOPOGON HETEROPHYLLUS* vs *ISOPOGON FORMOSUS*, MEMBERS LETTERS
- 5 *ISOPOGON LATIFOLIUS*
- 6 MEMBERS LETTERS, THREE NEW SPECIES OF PETROPHILE (*P. ANTECEDENS*, *P. CLAVATA* & *P. NIVEA*)
- 8 REVISION TO THE PETROPHILE KEY
- 10 GLOSSARY, SEED BANK
- 11 REFERENCES

EDITORIAL

Welcome to the third newsletter of the Isopogon & Petrophile study group. The time has certainly flown past, and this issue is a little late. One thing I asked for for Christmas was some good soaking rains. Melbourne is in the midst of its worst drought in at least ten years, with water restrictions being introduced in November, for the first time in twenty years. Further North and West, of course it is even worse. My family and I flew to my Parent's in Newcastle and the view out the window was terrible. Most of Victoria, usually so lush and green, was brown and barren. My thoughts and good wishes go to those dependent on the land for their livelihood. I have lost quite a few small things in my garden. A small *Petrophile pulchella*, that I had grown from seed died last week. Otherwise my Isopogons and Petrophiles are still hanging in there.

Thank you to all those members who have written. It's nice to hear how you are all going. I have printed some excerpts in this issue. I still have a few more that I will print next time. Please keep them coming, and let me know what you are doing with your Isopogons and Petrophiles, and anything about them in the natural environment.

Thank you again to Margaret Pieroni for her excellent photos and research, some of which I have used in this issue. I am hoping to use some of her artwork in forthcoming newsletters.

I am compiling an electronic archive of images for the study group. If anyone has photos or slides they would like to lend me, I will scan them into the archive and then return them. I hope to have a record of every taxon. Close up and habit shots of plants in the wild or cultivation, would all be excellent.

In August I was lucky enough to take a fortnights trip to Western Australia with Sue, Alex and my parents. Margaret Pieroni was our guide for the first part of the trip and took us to the WA Herbarium to meet Barbara Rye and Mike Hislop who are working on the Petrophiles and Isopogons there. We then travelled North along the Brand Highway and stayed at "Hi-Vallee", Badgingarra with Don and Joy Williams. Their property is a National treasure and their knowledge of the local flora and other natural heritage is immense. They have at least 15-20 species of Isopogon and Petrophile within

their boundaries. Talk about biodiversity! They took us on a guided tour with lots of stops and chances to explore. We left Margaret and travelled on to Allan and Lorraine Tinker's Western Flora Caravan Park, a wonderful place in the middle of the Eneabba sand plains. Each night Allan takes guests on a free flora walk, where he talks a little about the form and function of the plants around the park. The evening finishes with a microscopic view of the secret life of plants and is a real eye opener. Lorraine joins in with some of her fostered marsupials and cooks up a feast in the Park's dining room. We then headed further north to Kalbarri, a sleepy seaside village surrounded by the National Park. The Park has a range of habitats from seaside cliffs and plains to spectacular river gorges as well as unique and wonderful flora. The trip came to an all too sudden end and I was already planning a return before we'd left. Thanks to everyone who was so hospitable and knowledgeable when we were there. I would highly recommend all the places we visited and stayed. In the next newsletter, I will have a more detailed article on the trip and particularly some of the diverse and amazing flora we saw.

In Issue one I wrote an article about seed collecting from Isopogons. In it I mentioned that the fruiting cones break up into mainly bracts and infertile seed. Below is a scan of these elements. On the left are some bracts and infertile seed, whilst on the right are the true seed of a number of species. Hopefully this will help you in your propagating.



In this issue the featured taxon is *Isopogon latifolius*, a truly spectacular plant. In addition, I report on three new species of Petrophile, only recently described. Some of the results from the study group questionnaire are reported and a revision of the Petrophile key is included. I hope you enjoy it.

I hope everyone had a happy and safe festive season and that 2003 will treat you well.

David Lightfoot ☺

STUDY GROUP QUESTIONNAIRE

I send a questionnaire to each individual member when they join the Study Group. So far 12 completed forms have been returned to me. (I'd encourage all the other members to get them in to me, please. Every bit of info helps, even if you grow only one or two species.) I have begun to go through them, as they contain lots of great information.

The Regional breakdown of returned forms is as follows:

Vic 6, NSW 4, WA 1 & SA 1.

There are a total of 18 species of *Isopogon* as well as "Stuckey's Hybrid" and 14 *Petrophile* species being grown. As most of the replies have come from gardens in the Eastern States, it is not surprising that the most frequently grown species are those from that side of the Country. Virtually everyone is growing *Isopogon anemonifolius* and *Isopogon anethifolius*. It is more common for people to grow *Isopogons*, and anecdotally I have seen many more *Isopogons* than *Petrophiles* available in nurseries, despite the fact that there are many spectacular *Petrophile* species.

| Species | No. of members growing it |
|-------------------------------|---------------------------|
| <i>Isopogon anemonifolius</i> | 10 |
| cv "Woorikee 2000" | 2 |
| <i>anethifolius</i> | 8 |
| <i>axillaris</i> | 1 |
| <i>baxteri</i> | 1 |
| <i>buxifolius</i> | 2 |
| <i>cuneatus</i> | 5 |
| <i>dawsonii</i> | 2 |
| <i>divergens</i> | 1 |
| <i>dubius</i> | 3 |
| <i>fletcheri</i> | 2 |
| <i>formosus</i> | 5 |
| <i>latifolius</i> | 2 |
| <i>linearis</i> | 1 |
| <i>mnoraifolius</i> | 1 |
| <i>prostratus</i> | 2 |
| <i>sphaerocephalus</i> | 2 |
| <i>teretifolius</i> | 1 |
| <i>trilobus</i> | 2 |
| "Stuckey's hybrid" | 2 |

| | |
|--------------------------|---|
| <i>Petrophile biloba</i> | 3 |
| <i>canescens</i> | 1 |
| <i>diversifolia</i> | 2 |
| <i>ericifolia</i> | 1 |
| <i>fastigiata</i> | 1 |
| <i>linearis</i> | 1 |
| <i>longifolia</i> | 1 |
| <i>media</i> | 1 |
| <i>pedunculata</i> | 1 |
| <i>plumosa</i> | 1 |
| <i>pulchella</i> | 2 |
| <i>serruriae</i> | 2 |
| <i>sessilis</i> | 1 |
| <i>squamata</i> | 1 |

Most of the plants have been purchased from nurseries. Self-grown plants are about evenly distributed between seed and cutting propagated. Only one plant of *I. cuneatus* is a graft (Not sure of the rootstock).

Most members have their plants in well-drained soil or pots. The soil is not necessarily sandy, with many in clay or loam. Many are **not** grown in full sun. In general they receive little or no supplementary watering.

In terms of first flowering most seem to take about three years when grown from seed or cutting. A few are faster.

One comment was that *P. biloba* seemed to be affected by cold winters with delayed flowering and destruction of some flowers in the bud.

CONSERVATION

Landscape, the magazine from Western Australia's Department of Conservation and Land Management (CALM) reported in its Spring 2001 issue that 5 critically endangered plant species were being transplanted into nature reserves near Busselton, in a bid to save the species from extinction. It is part of a larger project to conserve 353 rare plant species. One of the species is the "Ironstone *Petrophile*". (The species name is not mentioned and I have been unable to match this common name to one. Any ideas from Study Group Members?) All five once grew near Busselton on the Abba Wet Ironstone Flats where more than 90% of the area has been cleared. The *Petrophile* was reduced to 170 Plants in three areas. Hopefully the move to protected areas will assure its survival.

**WHAT ARE THE DIFFERENCES
BETWEEN *I. HETEROPHYLLUS*
AND *I. FORMOSUS*?**

I wrote to Barbara Rye and Mike Hyslop, at the Western Australian Herbarium, to ask them about the differentiating features between these two very similar species. My reading of the Flora of Australia and other texts had not revealed a clear difference. Here are their replies;

From Barbara;

I can see your problem! Our specimens labelled with those two names completely overlap in distribution and morphology. Perhaps if I spent a long time on them differences would emerge, but I suspect that *I. heterophyllus* should be treated as a synonym of *I. formosus* subsp. *formosus*.

From Mike;

We haven't specifically looked yet at the *I. formosus/heterophyllus* question although we are aware that the current situation is not altogether satisfactory. I certainly agree with you that Foreman's Key characters in the Flora of Australia are a bit rubbery. When I've had cause during identifications to separate between subsp *formosus* and *I. heterophyllus*, I have come away unconvinced by the current taxonomy.

My rather tentative impression at this stage is that the differences between the two seems clinal in nature, with plants becoming more robust with a tendency to longer thicker leaves and larger flowers to the east and smaller and more gracile to the west. Whether these differences can be adequately circumscribed into the two entities currently recognised is not clear to me at this stage. It is also quite possible that there could be other characters there that may help in resolving this question.

I hope to find time in the next few months to look more closely at the group and will keep you informed.

It looks as if *I. formosus*, the first published name, may absorb *I. heterophyllus* in a future revision of the genus. I'll pass on any updates as they come to hand.

From Margaret Pieroni. Attadale, WA

I have had some seeds of *Petrophile helicophylla* for years and twice before I've sown them without result. In mid-April I sowed all the rest- probably about 80 to 100 in a tray with 6 *P. antecessens* in a row at one end. Then I piled dry leaves on top and burned them. After 28 days 3 *P. antecessens* popped up but no *helicophylla*, until 10 days later, lots of them appeared. I'm going to be busy potting up soon!

And from her next letter ... My seedlings are doing well. Have lost one *P. antecessens* but *P. helicophylla* (15 of them) are looking very good so far. The leaves are nearly 10 centimetres long and starting to get kinks in them. With luck I might finish up with a lovely border of them in the garden.

Margaret also sent me a photo of a Petrophile that I thought was P longifolia but was upright. She writes... I've just spoken with Barbara Rye [WA Herbarium]. I took the specimen to her that I thought was upright *P longifolia*. It's not. She confirmed it as *P filifolia*, a name that was wrongly given to *P acicularis*.

Petrophile longifolia is one species that has a many forms and is likely to be split into a number of species in future revisions. Ed

Elizabeth George and I had a few days at Hammersmith in October, helping to identify plants for the locals on the walk trails they've put through the town reserves. Petrophiles and Isopogons were very common there and flowering well. Hammersmith was one of the few good spots for wildflowers this year in the wheatbelt. We found one plant, not flowering, of a Petrophile with leaves slightly kinky- not straight like *P. longifolia*, nor as curly as *P. helicophylla*. When I checked in the "Flora of Australia", I decided it was probably *P. aspera*, though there's no illustration. I will try to find one photograph next time if it is flowering. The *P. longifolia* at picnic area near Crapella Rd north of Kojunup is a stunning plant. *P. serruriae* was also rather spectacular there as well.

From Bob O'Neill. Wandin North, Vic.

July 2002...Already I have entered something of a learning curve in regard to this group of plants. I would have 3 or 4 species of Isopogons including *formosus*, and to this stage they have all

Continued on page 6

ISOPOGON LATIFOLIUS R. BR.

(SYN. *ISOPOGON PROTEA* MEISSNER)

There is no doubt that this is one of Australia's most spectacular flowering shrubs. It has the largest flower heads of all the *Isopogons* and these are born en masse and terminally. In addition, it has very attractive bright green foliage and a naturally rounded growth habit. This plant is highly prized in the cut flower industry and is being plantation grown for that purpose in some areas of Victoria, South Australia and Western Australia.

The specific name comes from the Latin. *lati-* broad and *folium*, leaf. i.e. broad leaved *Isopogon*.

It is a medium to large shrub, without a lignotuber, being up to 3m tall (but usually 1.5-2m) and up to 2.5 m wide. The branches are often reddish, as is the new growth and the smaller branchlets are covered in fine hairs.

The glabrous leaves are elliptical or obovate in shape, with a length to 10 cm and width of about 3.5 cm, and end in a non-pungent point. Although they are generally flat some have a wave towards their apex. They are closely attached to the branches with only a very short petiole, or no stalk at all.



The flowers appear from September to December and are mauve to pink in colour. The pollen presenters are yellow and age to red. The individual flowers are glabrous and about 35 mm long, the entire inflorescence being up to 8cm in diameter! Each inflorescence is solitary

and displayed prominently.

The fruiting cones are grey and up to 4.5cm in diameter. They tend to be hemispherical to squashed spherical in shape. The cone scales are woolly.

I. latifolius closely resembles *Isopogon cuneatus* but can be differentiated by its broader leaves and pointed apex, larger flowers and more prominent involucre. In addition *I. cuneatus* has a wider distribution, down to Albany and the nearby coast.

Distribution- *Isopogon latifolius* is found in the Stirling Ranges area of Southern Western Australia. It tends to be found in the higher areas of the Ranges. It grows in gravelly to sandy soil, sometimes amongst

rocks. The surrounding vegetation is heath or woodlands.

Cultivation-

It requires very well drained soil, being sensitive to Phytophthora induced root rot, but resents fully drying out. This makes it difficult to



maintain in gardens in the more humid areas, but it can be grown in large tubs. It grows very well in cultivation over limestone in SA. Whilst full sun is appreciated, it will tolerate partial shade. It is slightly frost sensitive, but does grow in the only area of WA to occasionally receive snowfalls.

Light pruning after flowering can improve the bushiness of the plant and increase the next season's flower numbers. Be careful not to leave this too late however, or the next spring's flower buds may have been removed.

It can be grown from seed (germinating in 20-90 days) or cuttings. I am not aware of the effect of smoke water on germination times. Cuttings can be slow to root.

This plant has been successfully grafted onto Eastern *Isopogon* rootstock and I have seen grafted plants for sale in nurseries. This will no doubt widen the areas where it can be successfully grown.

I have *I. latifolius* in my garden at the top of a sloping bed with deep sandy soil. It is two years old, having been bought in a root bound 6-inch pot and is doing very well. I hope it will flower this spring.

(Map reproduced from Flora of Australia Vol 16 with permission of ABRS. Photos M. Pieroni)



grown well for me. The only propagation method I have used is by cuttings with good success. In our situation they seem to be able to handle some moisture and full sun and also the drier heat of summer. We are north facing, well drained in much of the garden areas and have considerable sun and air drainage. The property is of 8 acres, all landscaped, mainly natives and parkland.

I grow much of my own plants for the garden, though to this stage much more by cuttings. I have never grown Isopogons by seed. I have a plastic igloo and bottom heat facilities so can propagate all year round.

September 2002... Time I had an update with what is happening on our front. With the onset of formal Spring I have prepared and sown all the 13 species of seed that you sent me a little while ago. I sowed one third of the seed and later placed the containers on the bottom heat bed. This should provide a situation where the day temperature in the igloo should be well into the 20s and into the 30s, night temp should not fall below 10 on a frosty night for the seeds I would guess. I now await with eager anticipation for at least one plant per species to emerge.

On a visit to Kuranga nursery I bought *I. anemonifolius* and *I. mnoraifolius*. I aim to take cuttings as soon as possible. Currently I have been doing quite well with cuttings of Isopogons having struck a number quite quickly and expect to have a number more in the next couple of weeks. With hoped for cuttings results I would have something like 10 to a dozen species within a month.

THREE NEW SPECIES OF PETROPHILE!

Mike Hislop and Barbara Rye from the Western Australian Herbarium have recently described three new species of *Petrophile* in the journal *Nuytsia*

The three species are *Petrophile antecedens*, *P. clavata* and *P. nivea*. They are all fairly similar to *P. brevifolia* and key out to be close to it using Blackall & Grieve or the Flora of Australia Vol 16 keys. Barbara and Mike have revised the key from the Flora of Australia and it can be found below.

I'm now awaiting the follow up news from Bob. Ed.

From Cas Liber. St Pauls, NSW

Was having a chat with Merv Hodge about other things when he mentioned that he had tried to graft just about anything and had had some success with Isopogons, especially *I. latifolius* on *I. dawsonii*. Also tried *formosus*, *dubius* and *buxifolius* with some success on the same rootstock. He said *I. dawsonii* was the hardiest Isopogon for where he lives (SE Queensland- west of Brisbane) and that even eastern spp. such as *I. anethifolius* weren't that hardy where he was, though *I. anemonifolius* was a little better.

From Lyn Thompson. Woodford (Blue Mountains), NSW

... What with drought and fires we are in survival mode. We have lost natural *Petrophiles* by attrition even without the drought. I am wondering if the present privations may stimulate them into recreation in much the same way as fire does. When litter builds up in unburnt or undisturbed areas, the soil does not receive good moisture even with adequate rain. To reduce the fire hazard we have removed a lot more litter in more places than usual and are watering more so we are watching to see if it has an effect.

*Hope the recent rains have come your way Lyn. Please let us know whether the *Petrophile* seedlings are indeed appearing everywhere. Ed*

Petrophile antecedens Hislop & Rye. (From the Latin *antecedens* meaning preceding, due to its early flowering time) This shrub is 0.3-0.5m high to



0.5m wide, without a lignotuber. The leaves are simple and terete, and are 20-40 X 1-2mm with a

pungent point. The inflorescence is terminal, sessile and 20-30 mm in diameter, with pale cream flowers and densely hairy bracts. It flowers in May and early June. The fruiting cones are ovoid to globose and 12-15 x 10-13 mm.



It is found in the Wheatbelt and Jarrah Forests from Canning Dam and York, south to Dardadine and southeast to Harrismith. It occurs mainly in open woodlands, with one population known from heath, and grows mainly on sandy clay soil overlying laterite.

The species is not considered at risk with several populations over a relatively large area.

Petrophile clavata Hislop & Rye. (From the Latin *clavatus*- clubbed, referring to the shape of the hairs on the pollen presenter.) This is an erect or spreading shrub to 0.7m high. The branchlets are hairy, being particularly so on new growth. The leaves are simple and terete with a sharp point and are 20-50 x 1-2mm. The terminal, sessile flowerhead is 30-45mm in diameter with cream to pale yellow flowers of 15-20mm length. The pollen presenter is fairly densely covered in clavate hairs giving rise to its specific name. The bracts are densely hairy especially at their base. The flowering period is thought to be from May to July-August. The fruiting cones are 10-12 X 10-15 mm.

This taxon has been collected near Alexander Morrison National Park and near Calingiri. It grows in sandy soils on laterite hilltops amongst heathland vegetation. It does occur in at least one flora reserve but collections of the species have been limited and its true range is not known.

It is distinguished from *P. brevifolia* by the hairy coat on its branchlets, bracts and cone scales, the clubbed hairs, and longer base on its pollen presenter and longer hairs on the flowers.

It is distinguished from *P. antecedens* by differences in the pollen presenter (see key below) and by its larger inflorescence. In addition it is found in more exposed heath areas, rather than woodlands.

Petrophile nivea Hislop & Rye. (From the Latin *niveus*- snow white because of the flower colour.) This small shrub is rounded, 0.4-0.6 m high and up to 0.4m wide. It does not have a lignotuber. The branchlets are not hairy and tend to grow in a zigzag pattern, emerging at a wide angle from the previous year's growth. The leaves are simple and curved, terete and crowded along the branches. They are 10-15 x 1.5mm. The terminal flower heads are sessile and 20-25mm in diameter. The flowers are about 15 mm long and are white and hairy. The flowering period is from May to August. The fruiting cones are globose and 6-8mm in diameter.



It is known from only a single locality near Eneabba, growing on white sand over laterite in heath. This locality is on private property and thus the taxon has a priority one conservation code from CALM.

I have seen this plant and it has horticultural merit as a rockery specimen. Given its natural location, I would expect it to require absolutely perfect



drainage and full sun, with a low humidity Mediterranean climate.

Please note that this article is a summary of Mike and Barbara's paper "Three new early-flowering species of *Petrophile* (*Proteaceae*) from southwestern Australia. *Nuytsia* 14(3): 365-374 (2002)"

Revision to the Petrophile key from Flora of Australia Volume 16

(Reproduced from *Nuytsia* 14(3): 365-374 (2002))

This key should be inserted into the Flora key after the second lead of the fifth couplet on page 150. Note that in the original key couplet 14 should be *P. brevifolia* (not *P. teretifolia* as is printed)

5: Cones and inflorescence sessile

7 Most leaves more than 15 mm long

8 Leaves terminating in a pungent point 1-2.5 mm long; brush of pollen presenter not very dense, the axis clearly visible

A Involucral bracts densely hairy on base, the glabrous portion brown outside; pollen presenter with clubbed hairs

B Pollen presenter 1.5-2.2 mm long, the swollen portion more or less fusiform and partially hairy, the glabrous base about as long as the brush; involucral bracts prominent, conspicuously brown above the grey-hairy base.

(York area to Darkan area and Harrismith.)..... **P. antecedens**

B: Pollen presenter 3-4 mm long, the swollen portion very narrowly turbinate, glabrous and much longer than the cylindrical brush above; involucral bracts not prominent, with the brown apex more slender than in B above and not conspicuous above the grey-hairy base.

(Coorow to Calingiri.)..... **P. clavata**

A: Involucral bracts glabrous, grey throughout or with grey margins; pollen presenter with acute hairs

9 Involucral bracts very narrowly ovate; tepals 12-20 mm long.

(Shark Bay to Perth to near Ravensthorpe.) **P. brevifolia**

9: Involucral bracts ovate or almost elliptic; tepals c. 30 mm long.

(Mullewa to near Watheroo.)..... **P. megalostegia**

8: Leaves blunt or acute, but without a prominent pungent point; brush of pollen presenter dense or very dense (with the axis hidden) in all species except *P. media*

10 Tepals mauve or pink turning whitish; brush of pollen presenter c. 3 mm long, with clavate hairs.

(Stirling Range to Israelite Bay.)..... **P. teretifolia**

10: Tepals cream or yellow; brush of pollen presenter c. 2 mm long, with acute or clavate hairs.

11 Cone scales very prominently striate; tepals c. 10 mm long; brush hairs (except for the basal ones) with a recurved apex.

(Scott River to Two Peoples Bay.) **P. acicularis**

11: Cone scales not very prominently striate; tepals 15-25 mm long; brush hairs with apex patent or incurved.

12 Involucral bracts usually 20-40, grey throughout or brown with grey margins; cone scales narrowly ovate or ovate; pollen presenter brush moderately dense, with portions of the axis visible, the upper hairs antrorse and straight.

(Darling Range to Scott River to Ravensthorpe.) **P. media**

12: Involucral bracts usually 8-20, brown; cone scales ovate to broadly rhomboid; pollen presenter brush dense or very dense, the axis largely or fully hidden, the upper hairs either ascending and incurved or patent.

C Stems prostrate on mature plants; pollen presenter with no indentation at summit of swollen base, the basal hairs patent, all hairs obtuse to distinctly clubbed.

(Stirling Range area to Manypeaks to Hopetoun.)..... **P. sp. prostrate**

C: Stems more erect; pollen presenter with the basal hairs usually strongly antrorse so as to give the appearance of a constriction between the base and the brush, all hairs acute or rarely basal ones obtuse.

(Wandering to Perup River to Albany and Stirling Range area.) **P. longifolia**

7 Most leaves 6-15 mm long

13 Tepals glabrous. (Hyden to Stirling Range to Israelite Bay.)..... **P. phyllicoides**

13: Tepals villous

14 Leaves with a pungent point 0.5-2.5 mm long; pollen presenter with a truncate to narrowly obovoid glabrous base and terete upper axis, with hairs restricted to the terete portion.

D Leaves sufficiently distant not to conceal the branchlets and involucral bracts; involucral bracts grey throughout or brown with grey margins; tepals cream or pale yellow, the limb with hairs 0.5-0.8 mm long; cones 10-20 mm diameter.

(Shark Bay to Perth to near Ravensthorpe.) **P. brevifolia**

D: Leaves very crowded, concealing the branchlets and involucral bracts; involucral bracts brown throughout; tepals white, the limb with hairs 1-1.5 mm long; cones 6-8 mm diameter.

(Near Eneabba.) **P. nivea**

14: Leaves with a broad mucro at apex, not pungent; pollen presenter largely fusiform, with hairs on all but the base of the fusiform swelling.

(Southern Cross to Coolgardie to Peak Charles.)..... **P. arcuata**

GLOSSARY

Antrorse- directed upwards or forwards
Axillary- from the side of a branch, replacing a shoot
Bracts- A modified leaf at the base of the flower. They can be the showy part of the inflorescence, e.g. in Flannel Flowers (*Actinotus helianthi*) and Quaalup Bells (*Pimelea physodes*).
Calyx- the outer envelope of a flower protecting the developing bud formed by the sepals
Clavate- club shaped, enlarging gradually from base to apex.
Corolla- the inner floral envelope formed by the petals.
Endemic- distribution is limited to a defined area. e.g. Australia only
Fusiform- spindle shaped
Genus- a group of species linked by similarities. The level of classification below family
Glabrous- without hairs, smooth
Globose- ball or globe shaped
Hirsute- covered in hairs
Incurve- bending inwards
Inflorescence- a group of flowers arranged as a distinct entity
Involucre- a ring of bracts at the base of an inflorescence
Lignotuber- a swelling at the base of the stem, often underground, that contains dormant buds and energy stores. If the top of the plant is destroyed, it can regrow from the lignotuber.
Mucro- a short point terminating a structure
Obovate- like the longitudinal section of an egg with the narrow end at the base.
Ovoid- elliptical in shape with the base broadest.
Perianth- a non-fertile part of the flower consisting of petals and sepals
Petiole- the stalk by which a leaf is attached to the rest of the plant
Pungent- a stiff, sharp point
Recurve- bending downwards or backwards
Sessile- borne without a supporting part e.g. directly from a branch without a stem
Simple (leaves)- entire without teeth or lobes

Striate- when a surface is has ridges, grooves or similar linear markings

Taxa- (plural of taxon) comes from taxonomy, which is the science of classifying organisms into groups. A taxon is a group of plants sharing a relationship and so are categorised together. It is a unit of taxonomy.

Tepals- part of the perianth not clearly differentiated into calyx and corolla

Terete- cylindrical and tapering

Terminal- at the end of a shoot

Truncate- a structure which has a blunt end as if it is cut off

SEED BANK

The following seeds are available for members. Please send me a stamped self-addressed envelope, containing your requests and a small seed-type envelope for each species. I have purchased seed from Nindethana seeds. (Nindethana have the largest range of Australian plant seed that I have seen. You can order a catalogue by writing to them at PO Box 2121, Albany, WA, 6331.) In addition, I have added a couple of new species this issue. Please let me know which species you would most like to see in the bank. Donations of seed from any taxa will be gratefully added to the bank.

| | |
|--------------------------------|--------------------------------------|
| <i>Isopogon adenanthoides</i> | <i>Petrophile linearis</i> |
| <i>Isopogon anethifolius</i> | <i>Petrophile longifolia</i> |
| <i>Isopogon buxifolius</i> | <i>Petrophile macrostachya</i> |
| <i>Isopogon ceratophyllus</i> | <i>Petrophile media</i> |
| <i>Isopogon cuneatus</i> | <i>Petrophile pedunculata</i> |
| <i>Isopogon dawsonii</i> | <i>Petrophile pulchella</i> |
| | <i>Petrophile rigida</i> |
| <i>Petrophile biloba</i> | <i>Petrophile scabriuscula</i> |
| <i>Petrophile canescens</i> | <i>Petrophile semifurcata</i> |
| <i>Petrophile diversifolia</i> | <i>Petrophile serruriae</i> yellow & |
| <i>Petrophile drummondii</i> | pink |
| <i>Petrophile ericifolia</i> | <i>Petrophile shuttleworthiana</i> |
| <i>Petrophile fastigata</i> | <i>Petrophile striata</i> |
| <i>Petrophile heterophylla</i> | <i>Petrophile teretifolia</i> |
| <i>Petrophile incurvata</i> | |

REFERENCES

The following references were used, with the permission of the copyright owners where appropriate, in the preparation of this newsletter. (Thanks)

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Three new early-flowering species of *Petrophile* (Proteaceae) from south-western Australia. *Nuytsia* 14(3): 365-374 (2002)

STOP PRESS

The “Ironstone *Petrophile*” mentioned in the Conservation article on page 3 is in fact *Petrophile latericola*.

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